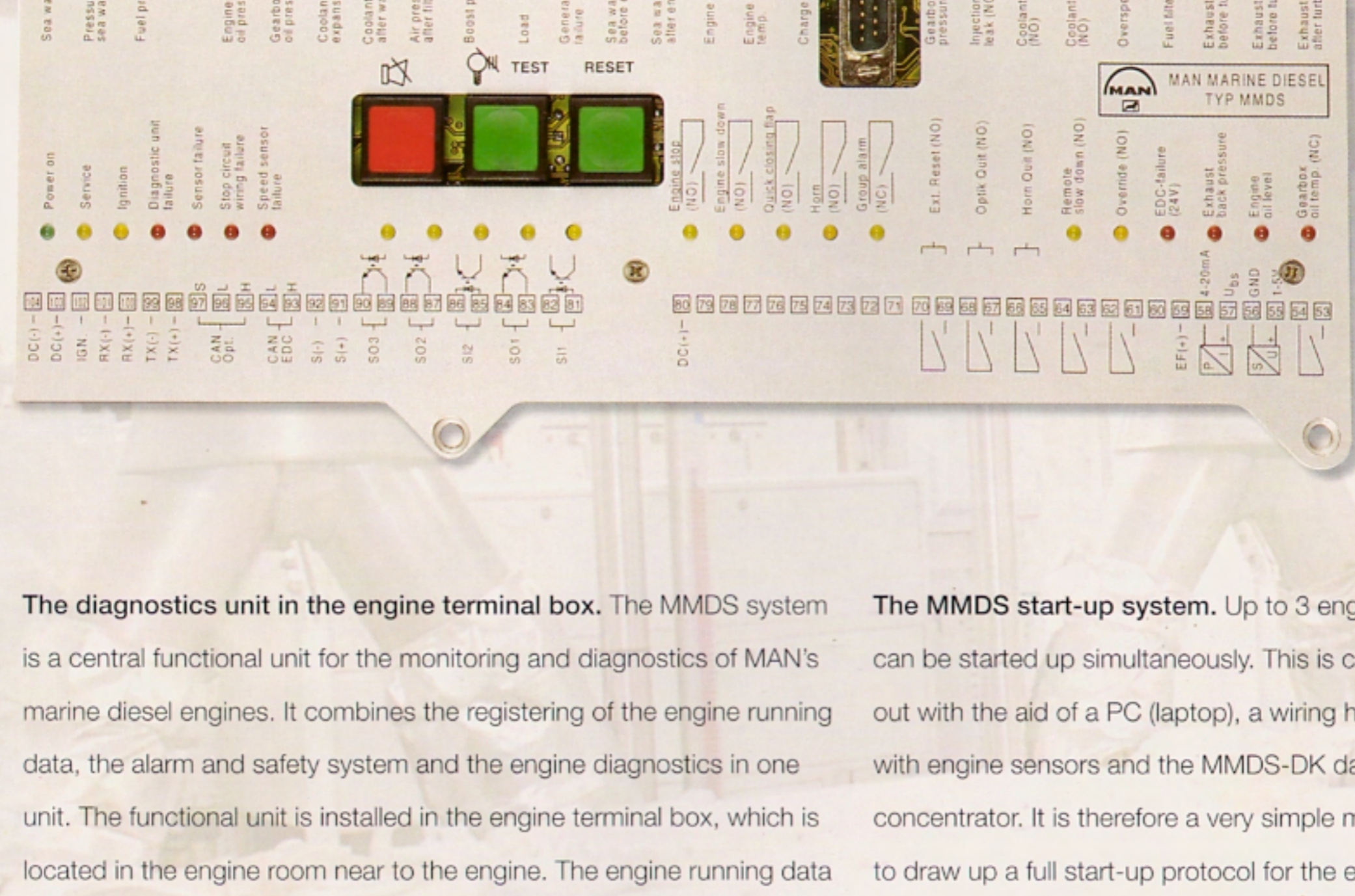
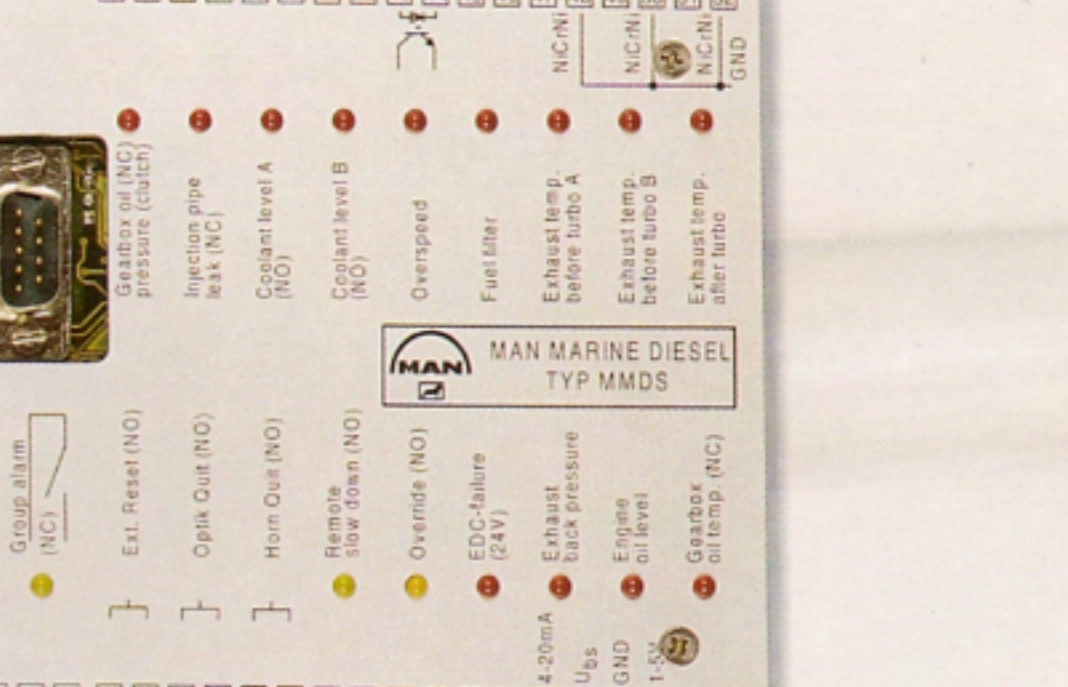




MAN Monitoring & Diagnostic System (MMDS) for marine engines

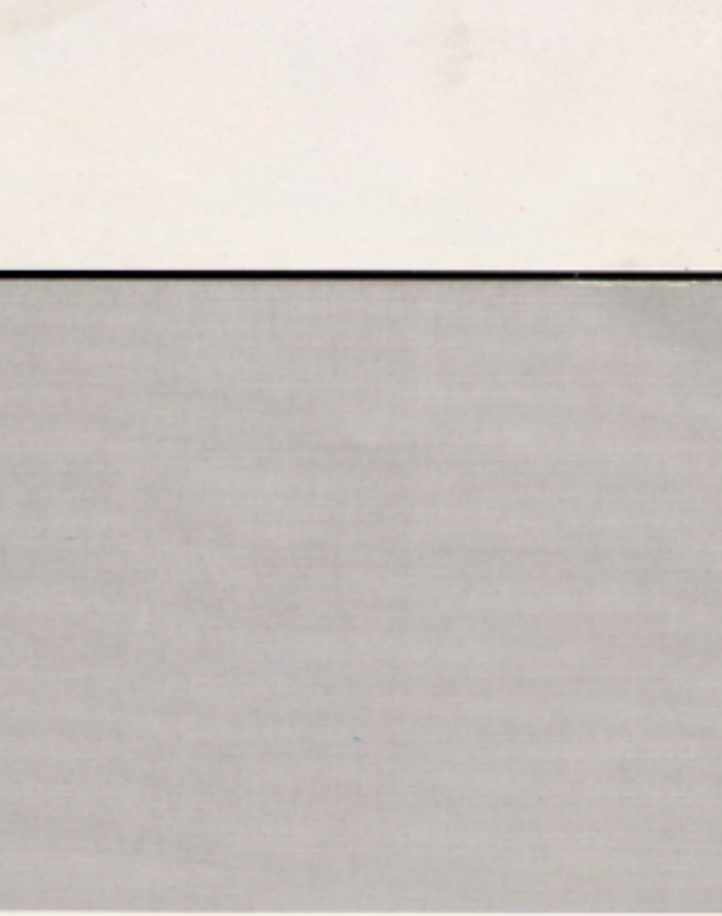


MMDS diagnostics unit



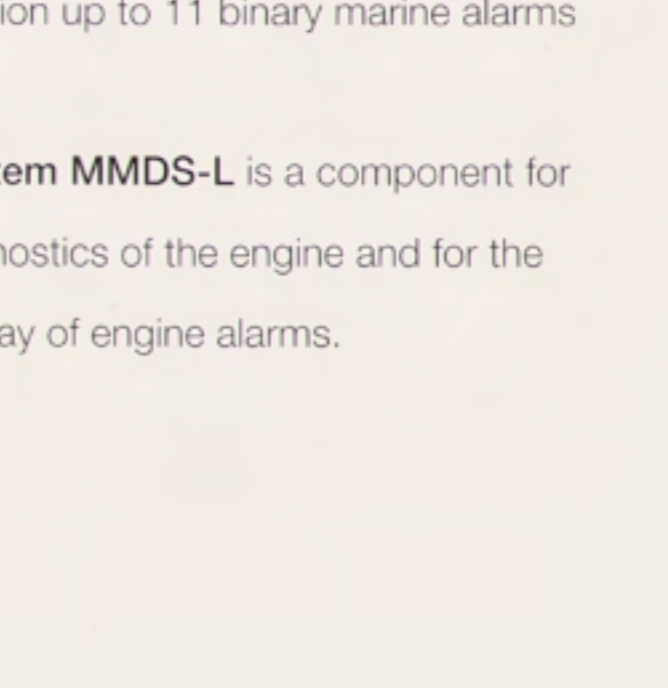
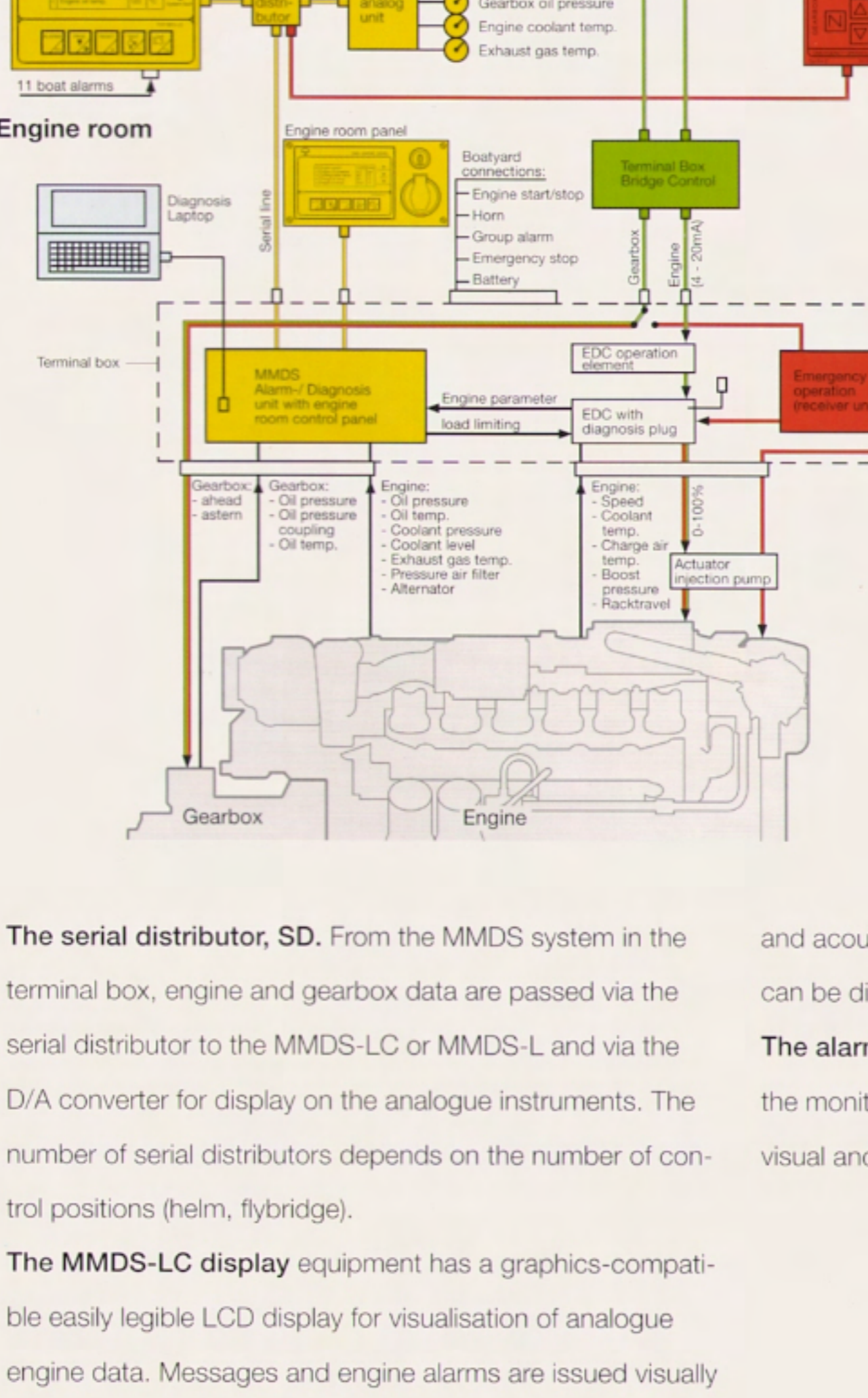
The diagnostics unit in the engine terminal box. The MMDS system is a central functional unit for the monitoring and diagnostics of MAN's marine diesel engines. It combines the registering of the engine running data, the alarm and safety system and the engine diagnostics in one unit. The functional unit is installed in the engine terminal box, which is located in the engine room near to the engine. The engine running data are recorded by sensors and supplied to the unit. If any limits are exceeded a preliminary alarm is first given followed by a main alarm. The sensor lines are automatically checked to see whether they are broken. Critical alarms additionally lead to reduction in engine speed. An integrated plug makes it possible to read all diagnostic data with the aid of a PC (laptop) and a data cable.

The MMDS start-up system. Up to 3 engines can be started up simultaneously. This is carried out with the aid of a PC (laptop), a wiring harness with engine sensors and the MMDS-DK alarm concentrator. It is therefore a very simple matter to draw up a full start-up protocol for the entire engine system.



The speed is adjusted by means of a throttle lever, e.g. from Bosch/Rexroth, electrically by a 4-20 mA signal or with a Bowden cable and a potentiometer installed on the engine terminal box.

MMDS-D28 with serial data line

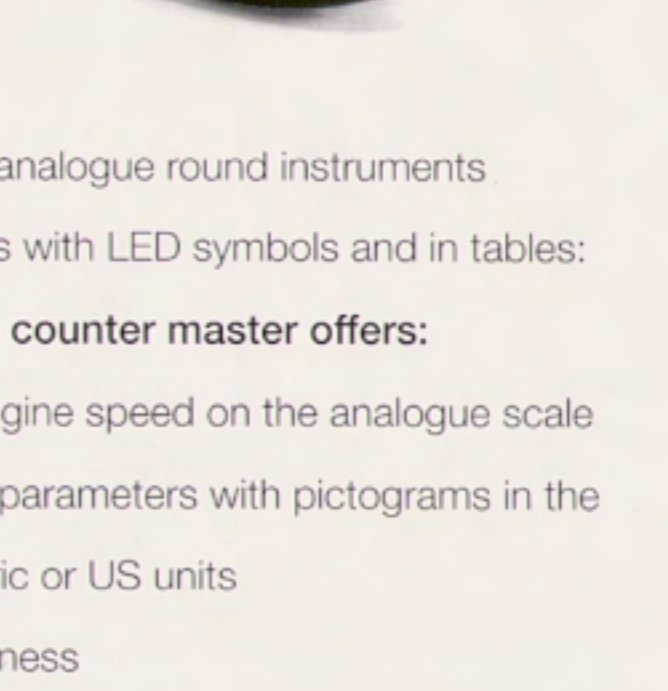
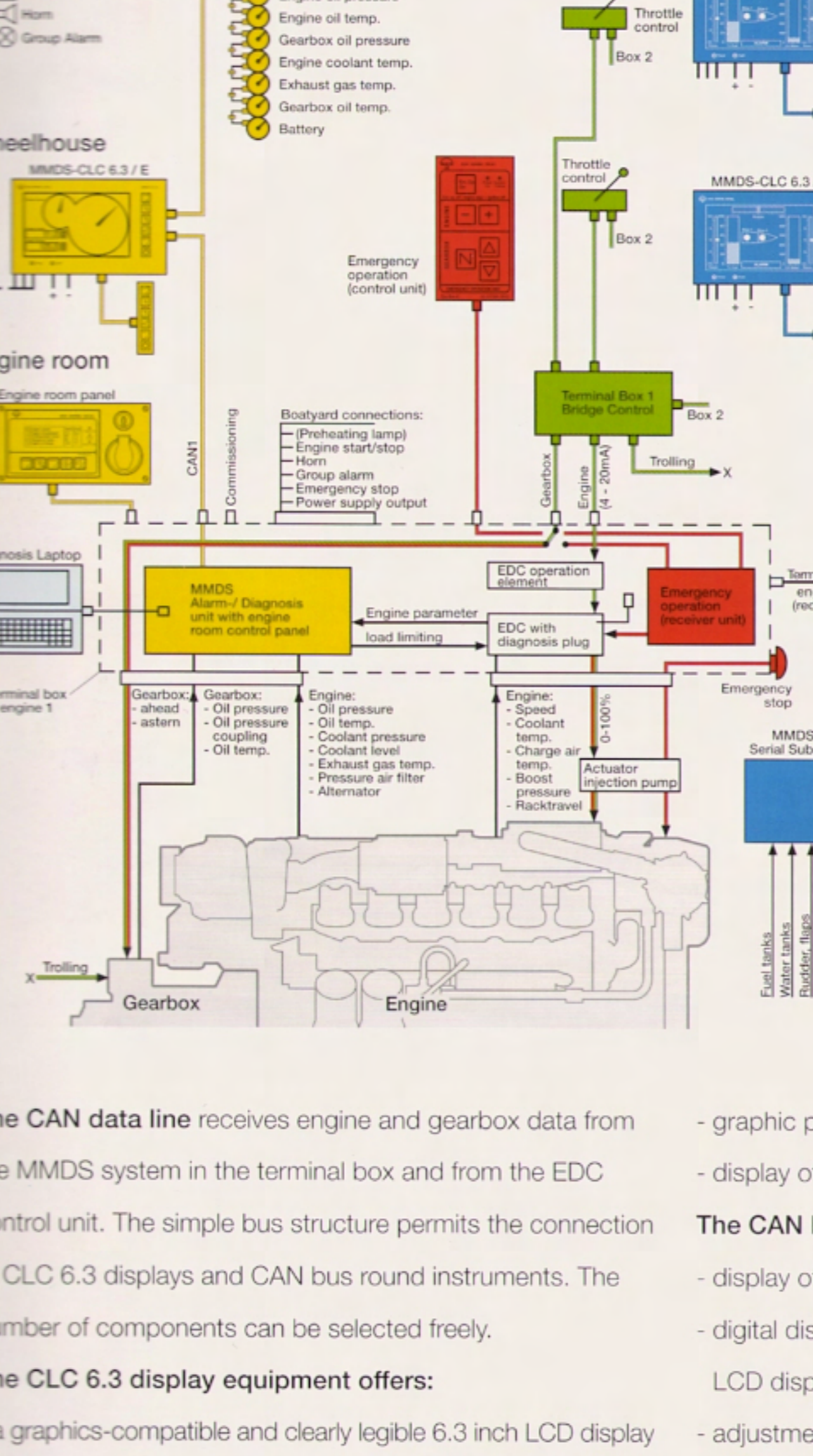


The serial distributor, SD. From the MMDS system in the terminal box, engine and gearbox data are passed via the serial distributor to the MMDS-LC or MMDS-L and via the D/A converter for display on the analogue instruments. The number of serial distributors depends on the number of control positions (helm, flybridge).

The alarm monitor system MMDS-L is a component for the monitoring and diagnostics of the engine and for the visual and acoustic display of engine alarms.

The MMDS-LC display equipment has a graphics-compatible easily legible LCD display for visualisation of analogue engine data. Messages and engine alarms are issued visually

with a CAN bus data line



The CAN data line receives engine and gearbox data from the MMDS system in the terminal box and from the EDC control unit. The simple bus structure permits the connection of CLC 6.3 displays and CAN bus round instruments. The number of components can be selected freely.

The CLC 6.3 display equipment offers:

- a graphics-compatible and clearly legible 6.3 inch LCD display with automatic dimming and enhanced contrast in sunshine
- visualisation of engine and gearbox data in 5 different languages and in metric or US units.

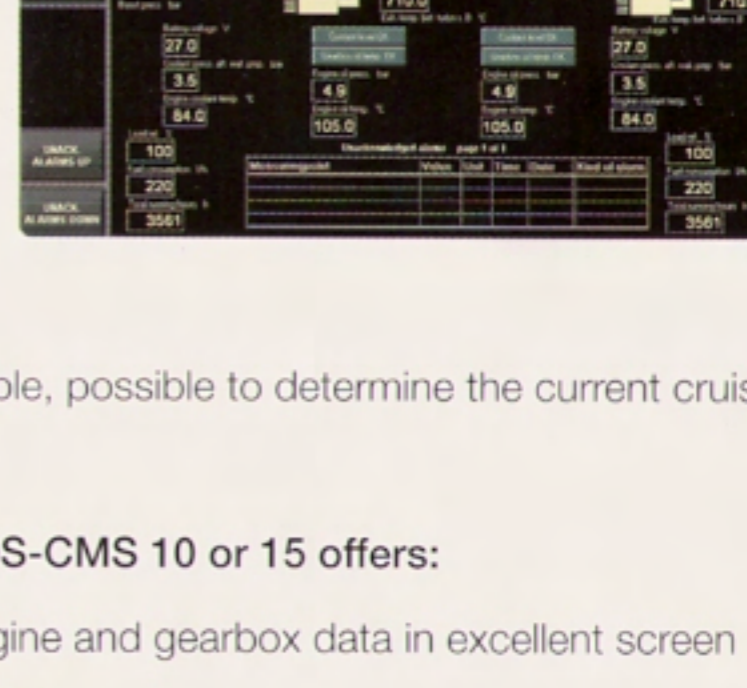
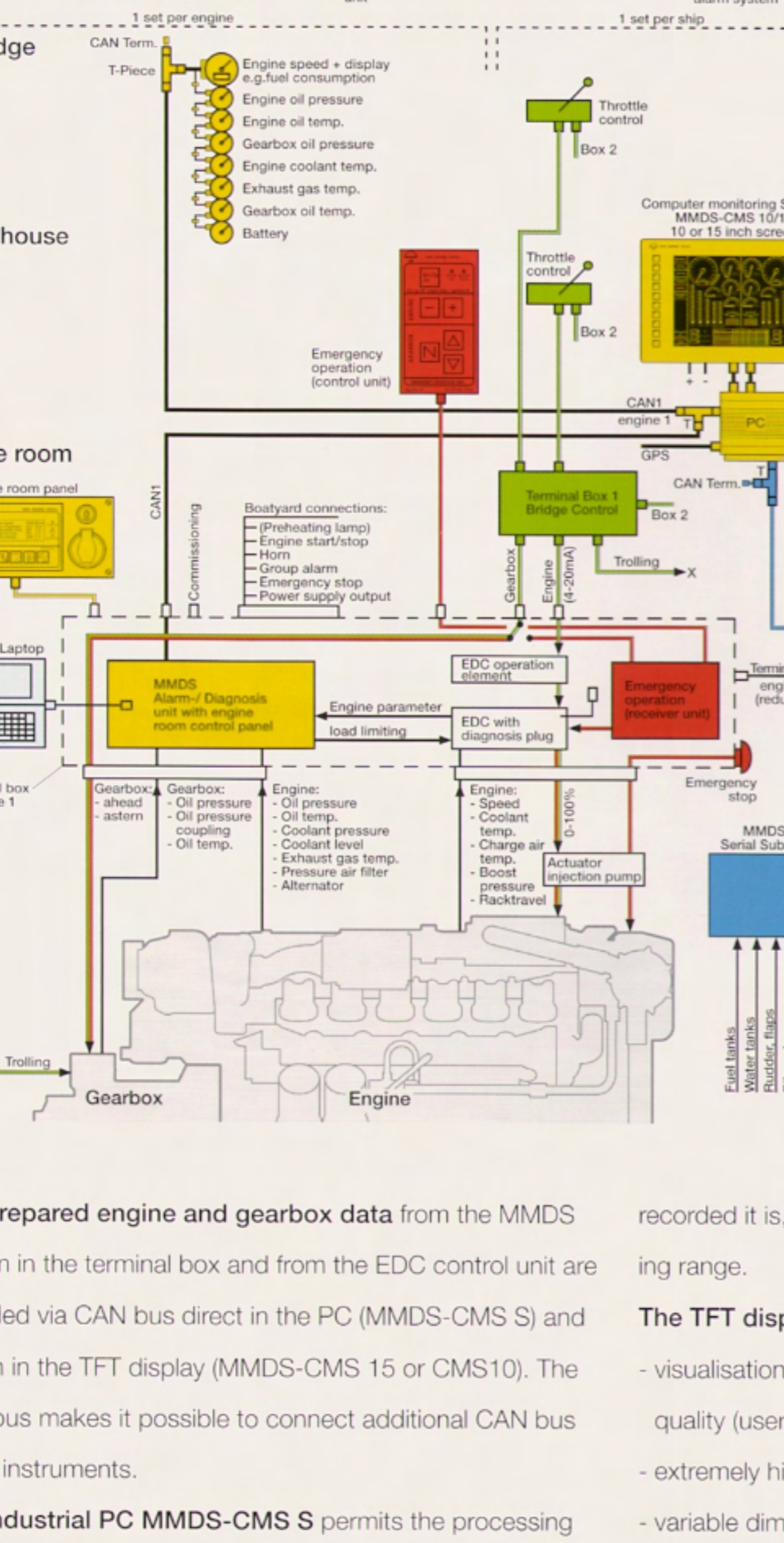
- graphic presentation of analogue round instruments

- display of alarm revolutions with LED symbols and in tables:

The CAN bus revolution counter master offers:

- display of the current engine speed on the analogue scale
- digital display of engine parameters with pictograms in the LCD display and in metric or US units
- adjustment of the brightness
- connection of further bus-compatible analogue displays (CAN bus slave instruments)

with CAN bus data line and PC display



The prepared engine and gearbox data from the MMDS system in the terminal box and from the EDC control unit are recorded via CAN bus direct in the PC (MMDS-CMS S) and shown in the TFT display (MMDS-CMS 15 or CMS10). The CAN bus makes it possible to connect additional CAN bus round instruments.

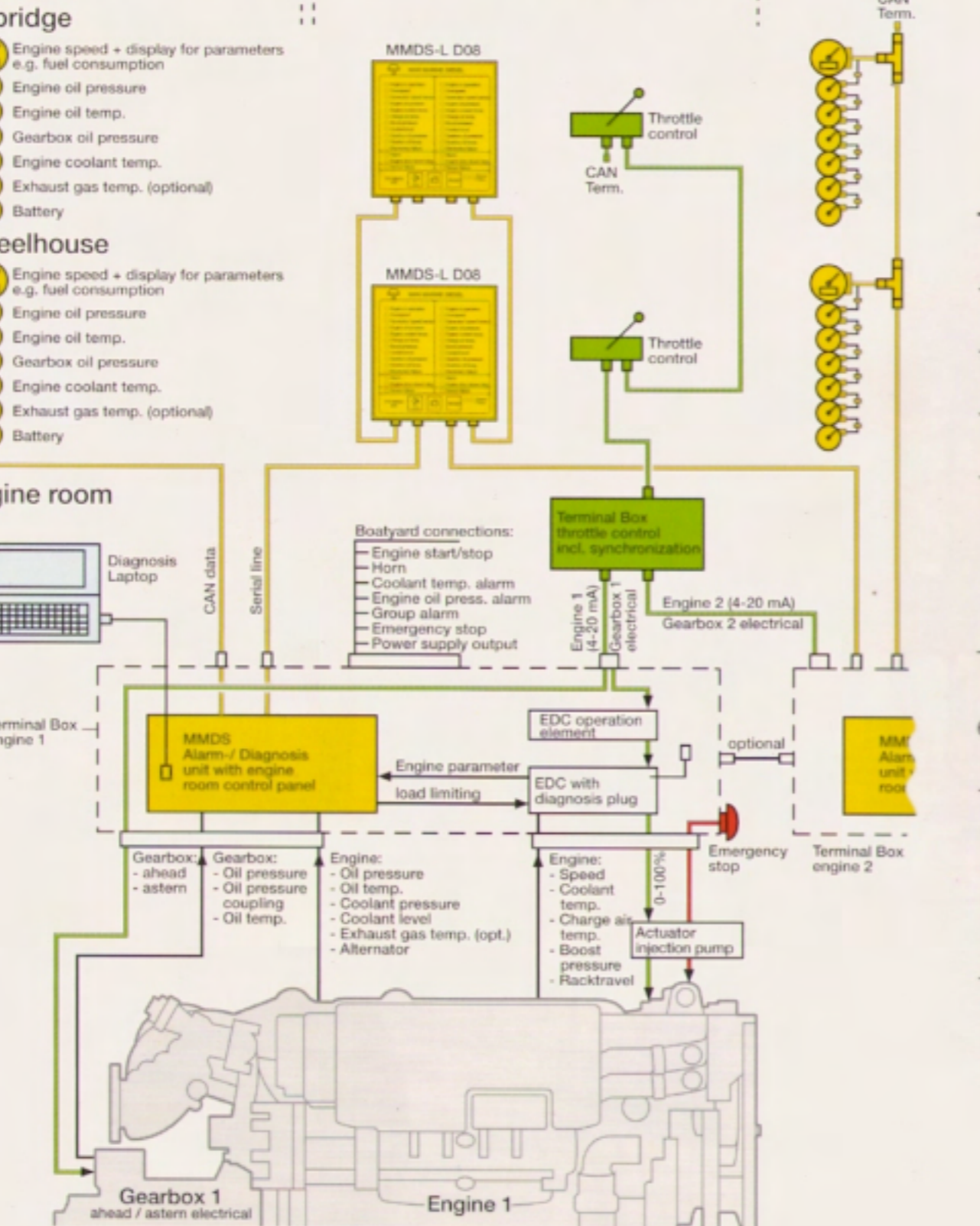
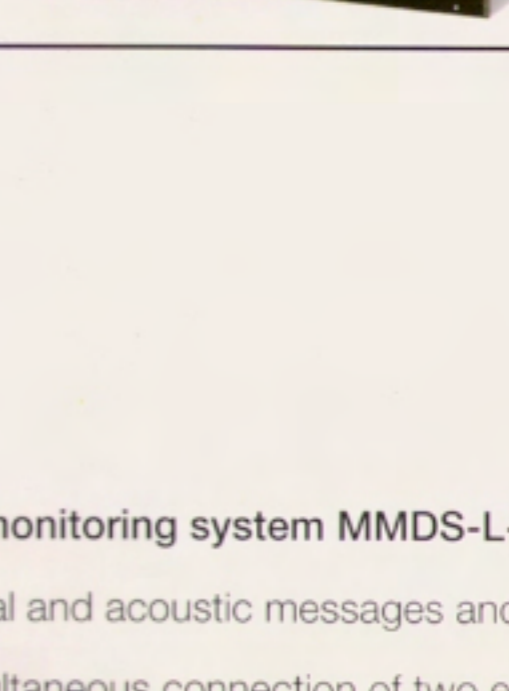
recorded it is, for example, possible to determine the current cruising range.

The industrial PC MMDS-CMS S permits the processing and display of diverse shipping reports. If a CPS system is connected and the fuel consumption and tank content are

The TFT display MMDS-CMS 10 or 15 offers:

- visualisation of the engine and gearbox data in excellent screen quality (user-defined too)
- extremely high luminosity
- variable dimming function for excellent legibility in all light conditions (even in direct sunshine)
- display sizes with 10" or 15" possible

MMDS-D08 with a serial and CAN bus data line



The monitoring system MMDS-L-D08 offers:

- visual and acoustic messages and engine alarms
- simultaneous connection of two engines
- display of sensor errors
- indication of reduction commands from the MMDS or EDC

There are two possibilities for the display of engine data:

- MMDS-L-D08 receives the engine and gearbox data via the serial data bus from the MMDS system in the terminal box
- CAN bus revolution counter master with integrated display (see MMDS-D28 with CAN bus)